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The Role of Executive Processes in Accounting for Prospective Memory Deficits in Ecstasy/Polydrug Users

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INTRODUCTION

Previous research suggested that both executive functions [1-5] and prospective memory [6-9] are impaired in ecstasy/polydrug users. According to Kopp and Thone (2000) [10] central executive functions play a critical role in Prospective Memory. We would therefore expect comparable deficits in both prospective memory and executive functions within the same cohort of ecstasy/polydrug users.

METHOD

In order to investigate the role of executive processes in accounting for prospective memory deficits in ecstasy/polydrug users a sample of seventy three ecstasy/polydrug users and sixty seven polydrug/non-ecstasy users (control group) were assessed on executive functions and prospective memory measures. The self-report measure of executive function, the BRIEF-A was used to capture any possible behavioral manifestations of executive function in ecstasy/polydrug users in comparison to the control group. Three laboratory measures of prospective memory assessing short-term and long-term time based prospective memory and event based prospective memory were developed and administered. The short-term time based prospective memory task required the participants to ask for a questionnaire (measuring their level of fatigue) every 20 minutes throughout their test session. The percentage of occasions that the participant remembered to ask for the questionnaire was calculated for the first and the second half of the test session as well as the overall percentage. In the long term time based prospective memory test (PM element) participants were asked to post a delayed recall test in a prepaid envelope one, two, and three weeks after the test session. Finally, in the event based prospective memory test participants had to indicate whether two patterns appearing on the computer screen were different or the same, while at the same time remembering to press the F1 key at the end of each test segment in order to record their scores.

RESULTS

Ecstasy/polydrug users performed worse on seven out of the nine scales of the BRIEF-A. Ecstasy/polydrug related deficits were evident on the scales of inhibit, self-monitor, initiate, WM, Plan and organization, task monitor and organization of materials. Ecstasy/polydrug users also performed significantly worse on all laboratory measures of prospective memory as they posted fewer envelopes, remembered to ask for the questionnaire on fewer occasions and forgot to press the F1 button more frequently than non-ecstasy users. However, further analysis revealed that the PM ecstasy-related deficits were not mediated by the deficits observed on the executive function measure.

DISCUSSION AND CONCLUSION

While executive processes do play a role in prospective memory performance in both users and nonusers, the ecstasy-related deficits in both measures do not appear to share a common basis.

REFERENCES

- [1] Fox HC, Parrott AC, Turner JJD. Ecstasy use: cognitive deficits related to dosage rather than self-reported problematic use of the drug. *J Psychopharmacol* 2001; 15: 273-81.
- [2] Verdejo-Garcia A, Rivas-Perez C, Lopez-Torrecillas F, Perez-Garcia M. Differential impact of severity of drug use on frontal behavioral symptoms. *Addict Behav* 2006; 31: 1373-82.
- [3] Montgomery C, Fisk JE. Everyday memory deficits in ecstasy-polydrug users. *J Psychopharmacol* 2007; 21: 709-17.
- [4] Fisk JE, Montgomery C. Real world memory and executive processes in cannabis users and nonusers. *J Psychopharmacol* 2008; 22: 727-36.
- [5] Fisk JE, Montgomery C. Sleep impairment in ecstasy/polydrug and cannabis-only users. *Am J Addict* 2009; 18: 430-7.
- [6] Heffernan TM, Jarvis H, Rodgers J, Scholey AB, Ling J. Prospective memory, everyday cognitive failure and central executive function in recreational users of Ecstasy. *Hum Psychopharmacol Clin Exp* 2001; 16: 607-12.
- [7] Rodgers J, Buchanan T, Scholey AB, Heffernan TM, Ling J, Parrott AC. Differential effects of ecstasy and cannabis on self-reports of memory ability; a web-based study. *Hum Psychopharmacol Clin Exp* 2001; 16: 619-25.
- [8] Rodgers J, Buchanan T, Scholey AB, Heffernan TM, Ling J, Parrott AC. Patterns of drug use and the influence of gender on self-reports of memory ability in ecstasy users: a web-based study. *J Psychopharmacol* 2003; 17: 389-96.

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- [9] Hadjiefthyvoulou F, Fisk JE, Montgomery C, Bridges N. Everyday and prospective memory deficits in ecstasy/polydrug users. *J Psychopharmacol* 2010; [Epub ahead of print].
- [10] Kopp UA, Thone AIT. Role of executive functions and memory processes in delayed intentions after head injury. Paper presented at the First International Conference on Prospective Memory, University of Hertfordshire: Hatfield UK, 2000.

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